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## Geo Queen

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## *Geo Queen*

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Keywords: New technologies, Accessory, Textile Innovation

Dimensions: L 25" x W 10"

**Mentor Statement** The purpose of this mentor student relationship was to provide an avenue by which 3D printing, or additive manufacturing, could be utilized as a tool in the design process. 3D printing is still an emerging technology and is seen as cutting edge within the fashion industry. The opportunity for students to learn methods of 3D modeling and printing will prove a valuable design skill in the fashion industry of today and most certainly tomorrow. I have chosen to sponsor this work as it exhibited a clever approach to the use of individual 3D printed objects for the development of fashion accessories, in this case, the neck/torso adornment piece *Geo Queen*. For the creation of this work, students worked technically and creatively. Technically in the use of geometric shape to form a comprehensive whole planned via paper pattern development, and creatively in the use of color and shape placement to achieve a compelling final product. Furthermore, there is distinct merit in the ability of pieces such as these to have consumer appeal via methods of mass customization; to produce less actual product that then doesn't need to be marked down or marked out of stock in retail formats (in essence printing to order); and to allow for individual expression in the assembly of shapes into a variety of possible outcomes.

**Design Statement** *Geo Queen* is a 3D printed torso fashion accessory. The inspiration for this piece developed from an adoration of intricate accessories worn by royalty and mythological characters. *Geo Queen* is meant to be an eye catching fashion accessory that also communicates status. Historically, modes of adornment such as jewelry, and headgear have been used to communicate status and power (Tortora & Marcketti, 2015). This piece is different from more traditional status symbols, such as crowns, due to the infusion of modernist/geometric design, and the use of a tech savvy method of creation.

*Geo Queen* capitalizes upon color, shape, balance, and unity to create an expressive whole. Colors used in this work include gold, teal, and purple, all of which have been culturally and historically linked to concepts of royalty, power, or status (Podhajny, 2002). The gems hanging from the back are aurora borealis crystals that reflect blue and purple to represent unity by mirroring the blue and purple hues in the geometric shapes. The four different shapes that make up *Geo Queen* are triangles, trapezoids, parallelograms and diamonds. Each 3D printed piece is colored according to their shape, which emphasizes unity even more. While the completed work is unified by color, it is also fragmented by form to demonstrate the duality of power and how it can be both helpful and hindering. The front and the back of *Geo Queen* are made up of the same pieces, yet they yield different results. This further symbolizes how power translates very differently when the same tools are placed in the hands of different people. In addition, the asymmetry of *Geo Queen* creates more interest by giving the eye a puzzle to solve.

*Geo Queen* is different from other 3D printed jewelry pieces available from the market. Many jewelry companies that incorporate 3D printing technology aim to replace or enhance the current jewelry market, which results in pieces that don't look much different from jewelry manufactured in more traditional ways. The company American Pearl uses 3D technologies to "shake up" the jewelry industry by allowing clients to customize their jewelry with different metal and stone options, while attempting to reduce cost and required labor (O'Connor, 2014). Jenny Wu, a professor at the Southern California Institute of Architecture, created a line of jewelry called LACE that is very fluid in line and shape (Nesbit, 2014). *Geo Queen* celebrates the rigidity of fused deposition modeling in a plastic material that is uniquely suited to the geometric shapes featured in this work.

Furthermore, *Geo Queen* contributes to and expands on the trend of neck and torso embellishments. The most common type of torso jewelry on the market today is body chains, these usually consist of chains that

are often attached to other gems and jewels. Kate Bock, a swimsuit model, has created her own brand called Cattura jewelry and has just debuted a line of body chains “versatile enough to be worn on any occasion,” (Hendrix, 2016). Other fast fashion retailers like Forever 21 and Lulu’s are also carrying body chains. These low cost accessories produced via traditional mass market manufacturing processes are of inferior quality and often have a short consumer use period due to high breakage or disinterest. *Geo Queen* represents a new possibility for the marketing/manufacturing of these types of accessories. Consumers could download the 3D files of shapes, print them via a desktop 3D printer, and arrange them in a pattern of their own liking. This process has the potential to also reduce waste via additive manufacturing and mass customization options in a direct to consumer format.

Design process for *Geo Queen* began with sketches of individual shapes. These shapes were then arranged on paper two dimensionally to explore possible combinations. Next, the exact size and shape of each piece was determined and paper prototypes were made to develop possible structural relationships. Paper pattern pieces were arranged on a dress form to explore multiple assembly options. Photographs of each possibility were taken to document the design process.

After this ideation stage, individual pieces were then modeled electronically using the 3D design software Rhinoceros. The shapes were designed with holes at each corner to allow for ease of assembly. Print files were organized by shape to capitalize upon 3D printer build volume and to reduce waste. Each shape was printed using a Makerbot 5th Generation Replicator. The shapes were printed in lightweight polylactic acid (PLA) via fused deposition modeling (FDM), which builds upon layers to create objects.

The pieces were then cleaned and sanded to prepare for them for color application. Geometric pieces were again organized by shape and spray painted in groups. The diamonds were painted purple because of the regal association between purple and diamond gems. The trapezoids were painted a muted turquoise to put a spin on the classic royal color scheme. Lastly, the triangles and the parallelograms were both painted gold to infuse elegance into the piece. After drying, the pieces were assembled using wire as a connector and lobster clasps at the shoulders. Lastly, chain and crystals were applied to the bottom of the back piece to create movement and focus.

In conclusion, *Geo Queen* is a 3D printed torso fashion accessory that aims to communicate status in a new way. This is achieved through the use of new technologies with a geometric and modern approach. Unlike other 3D printed pieces, *Geo Queen* is a piece that aims for the middle ground between avant garde and mass market so that it is both interesting and accessible.

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